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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,002	09/25/2003	James C. Earthman	NECORFA.005A	4540
20995	7590	03/23/2005	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP			TOOR, SADAF A	
2040 MAIN STREET			ART UNIT	
FOURTEENTH FLOOR			PAPER NUMBER	
IRVINE, CA 92614			3736	
DATE MAILED: 03/23/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

8W

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/671,002		EARTHMAN ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Sadaf Toor		3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>03152004</u> .  | 6) <input type="checkbox"/> Other: ____                                     |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 8-9, 11, 14-16, 18, and 20-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Earthman ('466). Earthman teaches a system and method for quantitative measurements of energy damping capacity. The method involves tapping an object (112) with a tapping rod (120), measuring the energy reflected from the object (with accelerometer 160; see step 324 in Fig. 3), creating a time energy-profile based on the energy reflected from the object (see step 328 in Fig. 3), and evaluating the time-energy profile to determine the acoustic damping capacity of the object (see step 336 in Fig. 3). With reference to claim 23, Earthman teaches a test probe (108) housing a movable impact rod (120), an accelerometer (160) configured to detect energy reflected from the object (112) after the impact rod impacts the object, and a computer (164) coupled to the accelerometer configured to generate and display a time-energy profile of the reflected energy as detected by the accelerometer. Regarding claims 1-3, 18, 20-22, and 24-26, Earthman teaches that the system and method were originally designed for measuring the damping characteristics of teeth and dental implants, but could be used in other applications such as testing composite structures and engineering materials (see column 8, lines 54-61). Therefore, the system and method are inherently capable of being used to measure the

Art Unit: 3736

damping capacity of a layered honeycomb structure. Regarding claim 11, Earthman teaches that the system can be used to test for structural integrity (see column 8, line 64-66), therefore it is fully capable of making a determination regarding the structural characteristics of an object.

Regarding claim 14, Fig. 2D illustrates the tapping rod having a cylindrical cross-section.

Regarding claims 8 and 16, Earthman teaches that the tapping rod (120) is positioned within a housing (108) that is mounted in contact with the object. Regarding claims 9, 15, and 29, column 2, lines 60-61 teach that the tapping rod is oriented substantially perpendicular with respect to a surface of the object. Regarding claims 27 and 28, the computer (164) is inherently capable of being programmed to serve as a data analyzer to evaluate the symmetry of a reflected energy pulse detected by the accelerometer and count the number of energy maxima reflected after the impact rod impacts the object.

3. Claims 4-6, 11, 13, 17, and 31-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Cucchiaro et al. ('008). Cucchiaro et al. teach a structural analyzer for medical implants. The analyzer comprises a tapping rod (probe 20) to tap a structure, an accelerometer (56) to measure the energy reflected from the structure as a result of the tapping, and a computer (12) to create a time-energy profile of the energy reflected from the structure. Column 7, lines 14-19 teach using the time energy profile to make a determination regarding the stability of the structure in the foundation (i.e., osseointegration and/or the bond characteristics of the implant). With reference to claims 33 and 34, see column 8, lines 53-62. Regarding claims 5-6, 13, 17, and 35-25, Cucchiaro et al. teach evaluating the time-energy profile and finding the resonant frequencies of a dental implant in column 5, lines 41-55 and column 6, line 62- column 7, line 2.

These steps inherently involve evaluating the symmetry and counting and the energy maxima of the time-energy profile.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 10, 12, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Earthman ('466). As discussed above, Earthman teaches a system and method for quantitative measurements of energy damping capacity of an object, in particular teeth and dental implants. However, Earthman fails to teach that the object is held in compression during the tapping. Column 4, line 49 – column 5, line 2 of Earthman teaches that even slight movements of the object during testing can effect the accuracy and consistency of the measurements. Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to provide a means for holding the object in compression during the tapping to avoid slight movements and increase the accuracy and consistency of the measurements.

6. Claims 7 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Earthman ('466) as applied to claims 4 and 11 above, in view of Murphy ('753). As discussed above, Earthman teaches a system and method for quantitative measurements of energy damping capacity of an object, in particular teeth and dental implants. Earthman teaches acquiring acceleration data and it is well known in the art that displacement data can be easily derived from

Art Unit: 3736

acceleration data. However, Earthman fails to teach the step of evaluating a force applied to the tapping rod during tapping as a function of displacement of the object. Murphy teaches a probe instrument including a displacement sensor and a force sensor (20) to measure the force of the probe against the surface of an object. Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to provide a system and method for quantitative measurements of energy damping capacity of an object similar to that of Earthman with the force transducer as taught by Murphy to measure the force applied to the tapping rod.

7. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cucchiaro et al. ('008) as applied to claim 31 above, in view of Barzin et al. (*Proceedings*). Cucchiaro et al. teach a structural analyzer for medical implants, and Column 7, lines 14-19 teach using the time energy profile to make a determination regarding the stability of the structure in the foundation. However, Cucchiaro et al. fail to teach that the foundation is a ligament structure. Barzin et al. teach mechanical biocompatibility of dental implant materials. In the introduction section on page 2492, Barzin et al. teach that the damping capacity of a tooth is primarily performed by a periodontal ligament (also see Fig. 1 and corresponding sections of the literature). Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to provide a method for making a determination regarding the stability of a structure in a foundation similar to that of Cucchiaro et al. with the foundation being a ligament structure as taught by Barzin et al. to act as a shock absorber and dissipate energy associated with impact.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sadaf Toor whose telephone number is (571) 272-4734. The examiner can normally be reached on Monday - Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on (571) 272-4726. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sat  
3/18/05

  
**CHARLES MARMOR**  
**PRIMARY EXAMINER**